

Chemistry I: Molarity problems

ON SEPARATE SHEET OF PAPER, solve the following problems showing ALL work.

1. Calculate the molarity of 1500 mL of solution, which contains 168 g KOH.
2. How many grams of HNO_3 are used to prepare 2.00 liters of 1.0 molar solution?

Calculate the weight of solute required in preparing the following:

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| 3. 5 liters of 3M NaOH solution | 4. 3.0 liters of 2.0M NaOH |
| 5. 1400 mL of 3.0 M NaOH | 6. 500 mL of 1.5M NaCl |
| 7. 1200 mL of 0.50 M KOH | 8. 900 mL of 2.5M H_2SO_4 |
| 9. 1.0 kiloliter of 2.5 M MgSO_4 | 10. 3.5 liters of 1.5M $\text{HC}_2\text{H}_3\text{O}_2$ |

Calculate the molarity of the following solutions:

11. 1.00 liter which contains 50.0 g NaOH
12. 1400 mL, which contain 120 g $\text{HC}_2\text{H}_3\text{O}_2$
13. 500 mL, which contain 63 g HNO_3
14. 1200 mL, which contain 100 g NaOH
15. 800 mL, which contain 196 g H_2SO_4
16. 1 kiloliter, which contains 56 kg KOH
17. Calculate the weight of NaOH needed to prepare 1.0 liter of 1.5 M solution.
18. Five hundred sixty grams of KOH are available to prepare a 2M solution. How many liters of solution can be made?
19. Nine hundred sixty grams of NaOH are used in preparing a 1.5M solution. What volume of solution can be made?
20. If 16 liters of a sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) solution contain 2.736 kg of sucrose, what is the molarity of the solution?